

WHAT IS CLAIMED IS:

5 1. A process for generating a purified solution of lactic acid, comprising the steps of:

- 5 (a) providing a source of lactate material which includes at least one of lactic acid, lactate salt, or both wherein the lactate salt includes calcium lactate;
- 10 (b) concentrating the source of lactate material by removing at least about 10% of the volume of the source of lactate material without ^{concentration} similarly reducing the volume of ~~lactate~~ material to form a concentrated solution;
- 15 (c) acidulating the source of lactate material with sulfuric acid to form an acidulated slurry which includes lactic acid and calcium sulfate;
- (d) removing at least some calcium sulfate from the acidulated slurry;
- (e) extracting the acidulated solution with an amine extractant to form a loaded solvent; and
- (f) stripping the loaded solvent to provide a purified solution of lactic acid.

20 2. The process of claim 1, wherein said step of stripping includes a step of back extracting the loaded solvent with an aqueous solvent.

25 3. The process of claim 1, wherein said amine extractant is combined with sulfuric acid prior to said step of extracting.

4. The process of claim 1, further comprising a step of adding sulfuric acid to the amine extractant during the step of extracting.

5. The process of claim 1, further comprising a step of reducing an amount of impurities having a molecular weight of about 5,000 to 500,000 Da in the source of lactate.

6. The process of claim 1, wherein the step of providing a source of lactate material includes providing a source of lactate material having a pH between about 5.0 to about 9.0.

7. The process of claim 1, wherein the source of lactate material has a pH below about 5.0.
8. The process of claim 1, wherein the source of lactate material is a fermentation broth.
- 5 9. The process of claim 8, wherein calcium carbonate or calcium hydroxide is included in the fermentation broth.
10. The process of claim 1, wherein mixed sugars are included as a carbon source in the fermentation broth.
- 10 11. The process of claim 1, wherein the amine extractant includes tertiary amines.
12. The process of claim 1, wherein the amine extractant includes less than 5wt% polar organic enhancer.
- 15 13. The process of claim 1, wherein the amine extractant includes sulfate within the range of about 0.01 mole/Kg to about 1.0 mole/Kg sulfate.
14. The process of claim 1, wherein the amine extractant includes Alamine 304 and IsoPar K.
- 20 15. The process of claim 1, further comprising a second step of concentrating the acidulated solution before said step of extracting.
16. The process of claim 15, further comprising a step of reducing an amount of residual
25 calcium sulfate prior to said second step of concentrating the acidulated solution.
17. The process of claim 1, further comprising a step of extracting the loaded solvent with a minor amount of aqueous solution prior to said step of back extracting.

18. The process of claim 1, wherein said step of concentrating is performed prior to said step of acidulating.

19. The process of claim 1, wherein said step of acidulating is performed prior to said step of concentrating.

20. The process of claim 1, further comprising a step of converting the purified lactic acid to lactate esters or lactide.

21. A process for generating a purified solution of lactic acid, comprising the steps of:

- (a) providing a source of lactate material which includes calcium lactate salt;
- (b) acidulating the source of lactate material with sulfuric acid to form an acidulated slurry which includes lactic acid and calcium sulfate;
- (c) removing at least some calcium sulfate from the acidulated slurry;
- (d) combining the acidulated solution with an amine extractant to form an extraction solution wherein the extraction solution includes sulfuric acid,
- (e) extracting the lactic acid from the acidulated solution with the amine extractant to form a loaded solvent; and
- (f) back extracting the loaded solvent with an aqueous solvent to provide a purified solution of lactic acid.

22. The process of claim 21, wherein the sulfuric acid in the extraction solution derived from the residual sulfate in the lactic acid solution after gypsum filtration.

23. The process of claim 21, further comprising a step of adding sulfuric acid to the extraction solution.